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Set	Items	Description
S1	250	(SUPERCONDUCTOR OR SUPERCONDUCTING) AND QUBIT
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1/2/61 (Item 61 from file: 2)

DIALOG(R)File 2:INSPEC

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6701141 INSPEC Abstract Number: A2000-20-0365-101, C2000-10-4270-015

Title: Leakage and fidelity of real qubits

Author(s): Fazio, R.; Palma, G.M.; Sciacca, E.; Siewert, J.

Author Affiliation: Dipt. di Metodologie Fisiche e Chimiche, Catania, Italy

Journal: Physica B Conference Title: Physica B (Netherlands)
vol.284-288 p.1822-3

Publisher: Elsevier,

Publication Date: July 2000 Country of Publication: Netherlands

CODEN: PHYBE3 ISSN: 0921-4526

SICI: 0921-4526(200007)284/288L:1822:LEFQ;1-Z

Material Identity Number: M742-2000-014

Conference Title: 22nd International Conference on Low Temperature Physics

Conference Date: 4-11 Aug. 1999 Conference Location: Espoo, Finland

Document Number: S0921-4526(99)03034-3

Language: English Document Type: Conference Paper (PA); Journal Paper (JF)

Treatment: Theoretical (T)

Subfile: A C

Descriptors: Hilbert spaces; Josephson effect; leakage currents; quantum computing; **superconducting** junction devices

Identifiers: qubits; Hilbert space; error class analysis; fidelity; leakage; qubits operation; Josephson junctions; Josephson effect; quantum computation

Class Codes: A0365 (Quantum theory; quantum mechanics); A7450 (Superconductor tunnelling phenomena, proximity effects, and Josephson effect); C4270 (Quantum computing theory)

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6620423 INSPEC Abstract Number: A2000-14-7450-023, B2000-07-1265B-047,
C2000-07-4270-013

Title: Josephson junction quantum bits and logic gates

Author(s): Makhlin, Y.; Schon, G.; Shnirman, A.

Author Affiliation: Inst. fuer Theor. Festkoerperphys., Karlsruhe Univ.,
Germany

Journal: Physica B Conference Title: Physica B (Netherlands) vol.280,
no.1-4 p.410-11

Publisher: Elsevier,

Publication Date: May 2000 Country of Publication: Netherlands

CODEN: PHYBE3 ISSN: 0921-4526

SICI: 0921-4526(200005)280:1/4L:410:JJQB;1-F

Material Identity Number: M742-2000-008

U.S. Copyright Clearance Center Code: 0921-4526/2000/\$20.00

Conference Title: 22nd International Conference on Low Temperature
Physics. LT-22

Conference Sponsor: Acad. Finland; Helsinki Univ. Technol.; IUPAP; Int.
Assoc. Promotion of Sci.; et al

Conference Date: 4-11 Aug. 1999 Conference Location: Helsinki, Finland

Document Number: S0921-4526(99)01791-3

Language: English Document Type: Conference Paper (PA); Journal Paper
(JP)

Treatment: Experimental (X)

Subfile: A B C

Descriptors: coherence; Cooper pairs; Josephson effect; logic gates;
nanotechnology; quantum computing; quantum theory; single electron
transistors; SQUIDS; **superconducting** transistors

Identifiers: Josephson junction; quantum bits; logic gates;
low-capacitance junctions; **superconducting** state coherence; single-charge
systems; control mechanisms; logic states; Cooper-pair charge; single-bit
gates; two-bit gates; voltage pulses; flux pulses; phase coherence time;
quantum state reading; single-electron transistor; **qubit** coupling;
quantum measurement process; density matrix; time evolution; coupled system
density matrix

Class Codes: A7450 (Superconductor tunnelling phenomena, proximity
effects, and Josephson effect); B1265B (Logic circuits); B3240C (
Superconducting junction devices); C4270 (Quantum computing theory)

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DIALOG(R) File 2:INSPEC

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6474394 INSPEC Abstract Number: A2000-04-7450-011, C2000-02-4270-020

Title: Superconducting **persistent-current** qubit

Author(s): Orlando, T.P.; Mooij, J.E.; Lin Tian; van der Wal, C.H.; Levitov, L.S.; Lloyd, S.; Mazo, J.J.

Author Affiliation: Dept. of Electr. Eng. & Comput. Sci., MIT, Cambridge, MA, USA

Journal: Physical Review B (Condensed Matter) vol.60, no.22 p. 15398-413

Publisher: APS through AIP,

Publication Date: 1 Dec. 1999 **Country of Publication:** USA

CODEN: PRBMDO **ISSN:** 0163-1829

SICI: 0163-1829(19991201)60:22L:15398:SPCQ;1-V

Material Identity Number: P279-1999-046

U.S. Copyright Clearance Center Code: 0163-1829/99/60(22)/15398(16)/\$15.0

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Document Number: S0163-1829(99)00746-8

Language: English **Document Type:** Journal Paper (JP)

Treatment: Theoretical (T)

Subfile: A C

Descriptors: aluminium; Josephson effect; mesoscopic systems; quantum computing; type II superconductors

Identifiers: **superconducting** persistent-current **qubit** ; nanoscale Josephson junctions; **superconducting** loop; Coupled systems; decoherence sources; quantum bits; Al

Class Codes: A7450 (Superconductor tunnelling phenomena, proximity effects, and Josephson effect); A7470B (Elemental superconductors); A0365 (Quantum theory; quantum mechanics); A7335 (Mesoscopic systems and quantum interference); C4270 (Quantum computing theory)

Chemical Indexing:

Al int - Al el (Elements - 1)

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1/2/70 (Item 70 from file: 2)

DIALOG(R) File 2:INSPEC

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6268514 INSPEC Abstract Number: B1999-07-3240C-019, C1999-07-4270-003

Title: Coherent control of macroscopic quantum states in a single-Cooper-pair box

Author(s): Nakamura, Y.; Pashkin, Yu.A.; Tsai, J.S.

Author Affiliation: NEC Fundamental Res. Lab., Ibaraki, Japan

Journal: Nature vol.398, no.6730 p.786-8

Publisher: Macmillan Magazines,

Publication Date: 29 April 1999 Country of Publication: UK

CODEN: NATUAS ISSN: 0028-0836

SICI: 0028-0836(19990429)398:6730L:786:CCMQ;1-E

Material Identity Number: N003-1999-018

U.S. Copyright Clearance Center Code: 0028-0836/99/\$12.00+2.00

Language: English Document Type: Journal Paper (JP)

Treatment: Applications (A); Practical (P); Experimental (X)

Subfile: B C

Descriptors: Cooper pairs; Josephson effect; nanotechnology; quantum computing; **superconducting** junction devices; superconductive tunnelling

Identifiers: coherent control; macroscopic quantum states;

single-Cooper-pair box; nanometre-scale **superconducting** electrode;

Josephson junction; artificial two-level electronic system; charge states;

tunnelling; quantum bit; **qubit**; quantum computer; short voltage pulse;

coherent quantum state evolution; tunnelling current; probe junction

Class Codes: B3240C (Superconducting junction devices); C4270 (Quantum computing theory)

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4961194 INSPEC Abstract Number: A9512-7450-020, B9507-3240C-017

Title: Static and dynamic transport in parity -sensitive systems

Author(s): Hanke, U.; Galperin, Yu.; Chao, K.A.; Gisselalt, M.; Jonson, M.; Shekhter, R.I.

Author Affiliation: Div. of Phys., Inst. of Technol., Trondheim, Norway

Journal: Physical Review B (Condensed Matter) vol.51, no.14 p. 9084-95

Publication Date: 1 April 1995 Country of Publication: USA

CODEN: PRBMDO ISSN: 0163-1829

U.S. Copyright Clearance Center Code: 0163-1829/95/51(14)/9084(12)\$06.00

Language: English Document Type: Journal Paper (JP)

Treatment: Theoretical (T)

Abstract: A microscopic theory has been constructed to investigate tunneling current and shot noise in a normal- **superconductor** -normal (NSN) single-electron transistor (**SET**). In contrast to the time-averaged current, the time-dependent current that determines the shot noise depends on where in the circuit it is measured. For an even- **parity** superconducting ground state the pair-tunneling in the dominating Andreev channel will be suppressed as one or both of two single-particle channels open up at increased bias voltages. With further increase of bias, Andreev tunneling between odd- **parity** charge states contributes significantly to the current. Threshold voltages for these tunneling processes vary with circuit parameters and can be identified with the normalized shot noise, which is more sensitive to both the switching of charge transport channels and the circuit parameters of the NSN **SET** than the time-averaged current. Our calculated results have been compared with recent experiments. (23

Refs)

Subfile: A B

Descriptors: shot noise; single electron transistors; superconducting device noise; superconducting transistors; superconductive tunnelling

Identifiers: **parity** -sensitive systems; microscopic theory; tunneling current; shot noise; normal- **superconductor** -normal single-electron transistor; time-averaged current; time-dependent current; dominating Andreev channel; even- **parity** superconducting ground state; pair-tunneling; single-particle channels; threshold voltages; circuit parameters

Class Codes: A7450 (Superconductor tunnelling phenomena, proximity effects, and Josephson effect); A7440 (Fluctuations and critical effects in superconductors); B3240C (Superconducting junction devices)

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13671143 PASCAL No.: 98-0379224

Unusual states of inhomogeneous d SUB x SUB 2 SUB - SUB y SUB 2 +id SUB x SUB y superconductors

SALKOLA M I; SCHRIEFFER J R

NHMFLL and Department of Physics, Florida State University, Tallahassee, Florida 32310

Journal: Physical review. B, Condensed matter, 1998-09-01, 58 (10)

R5952-R5955

ISSN: 0163-1829 CODEN: PRBMDO Availability: INIST-144 B

Document Type: P (Serial) ; A (Analytic)

Country of Publication: United States

Language: English

Superconductors whose order parameter violates time-reversal symmetry and **parity** have unusual properties that **set** them apart from conventional superconductors. In particular, if translation symmetry is also broken, the superconducting state generates spontaneously a current and a magnetic field. These phenomena are studied using a d SUB x SUB 2 SUB - SUB y SUB 2 +id SUB x SUB y **superconductor** as a prototype. Some of the most striking consequences of the symmetry breaking are examined at boundaries and in the presence of pointlike impurities and quasiparticles.

English Descriptors: Theoretical study; BCS theory; Spontaneous symmetry breaking; Quasiparticles; Impurities; High-Tc superconductors

French Descriptors: 7480; 7420; 7425J; 7425H; Etude theorique; Theorie BCS; Brisure symetrie spontanee; Quasiparticule; Impurete; Supraconducteur haute temperature

Classification Codes: 001B70D80; 001B70D20; 001B70D25J; 001B70D25H

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Set      Items   Description
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                ONDUCTOR
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